

New records of *Passiflora* subgenus *Decaloba* (Passifloraceae)

Michael Alvim Milward-de-Azevedo

Universidade Federal Rural do Rio de Janeiro, Instituto Três Rios, Departamento de Ciências do Meio Ambiente, Avenida Prefeito Alberto da Silva Lavinas 1847, Centro, CEP: 25802-100, Três Rios, RJ, Brazil; michaelmilward@gmail.com

Abstract

New records of 5 species of *Passiflora* subgenus *Decaloba* (*Passiflora amalocarpa*, *P. auriculata*, *P. longilobis*, *P. saxicola*, and *P. transversalis*) from various municipalities, Brazilian states, and Latin American countries are documented. Therefore, this survey contributes to the knowledge and geographical distribution of the family Passifloraceae sensu stricto. Records of *P. longilobis* and *P. transversalis*, species previously considered endemic to Brazil, were confirmed from Bolivia and Panama, and from Argentina, Paraguay, and Uruguay, respectively.

Key words

Conservation, geographic distribution, *Passiflora misera* complex.



Academic editor: Marcelo Trovó Lopes de Oliveira | Received 26 October 2018 | Accepted 16 January 2019 | Published 8 February 2019

Citation: Milward-de-Azevedo MA (2019) New records of *Passiflora* subgenus *Decaloba* (Passifloraceae). Check List 15 (1): 149–159. <https://doi.org/10.15560/15.1.149>

Introduction

Passiflora L., the most representative genus of Passifloraceae sensu stricto, has a pantropical distribution and approximately 570 species (Ocampo and D'Eeckenbrugge 2017). The genus is currently split into 5 subgenera: *P. subg. Astrophea* (DC.) Mast., *P. subg. Deidamioides* (Harms) Killip, *P. subg. Decaloba* (DC.) Rchb., *P. subg. Passiflora*, and *P. subg. Tetrapathea* (DC.) P.S. Green (Feuillet and MacDougal 2003 [2004], Krosnick et al. 2009).

Passiflora subg. *Decaloba* is represented by herbaceous vines. Species in this subgenus are characterized by: linear subulate stipules; presence or absence of ocelli in leaf blades; small flowers (< 4 cm in diameter), corona filaments with 1 or 2 series, plicate operculum; berries or capsules for fruits; and reticulate, foveolate, or transversely grooved seeds (Milward-de-Azevedo et al. 2012).

Passiflora misera Kunth forms a complex composed

of 7 species: *P. amalocarpa* Barb. Rodr., *P. longilobis* Hoehne, *P. misera*, *P. pardifolia* Vanderpl., *P. porophylla* Vell., *P. saxicola* Gontsch., and *P. transversalis* M.A. Milward-de-Azevedo. They are vines, which are characterized by: flat to cylindrical stems; bilobate leaf blades with ocelli; flowers with 1 or 2 series of corona filaments, external filaments filiform or dolabriliform, and internal filaments with capitate apex, ellipsoidal to fusiform ovary; and ellipsoidal or fusiform berries. They may be easily confused in the absence of flowers and may occur sympatrically, which makes their identification difficult.

The present work is a result of an ongoing taxonomic revision of the *Passiflora* subg. *Decaloba* in Brazil and provides brief descriptions, taxonomic and ecological comments, as well as distributional maps showing new records of 5 species. The complete descriptions and distributions of these species can be found in Milward-de-Azevedo et al. (2012).

Methods

The herbaria consulted were: AAH, BR, C, CTES, ESA, F, G, GB, GH, HB, IAC, INPA, INTA, K, LIL, LPB, LPS, MBM, MG, MO, NY, P, PACA, R, RB, UFRN, US, USZ, WIS. The acronyms are in accordance with Thiers (2018).

The terminological concepts used for the descriptions follow Rizzini (1977) and Stearn (1995). The previously known occurrence points were taken from Milward-de-Azevedo (2007) and Milward-de-Azevedo et al. (2012), and the new occurrence points were based on the localities as provided by the collectors. A distribution map was built using the online tool SimpleMappr (<http://www.simplemappr.net/>). The vegetation classification system adopted follows the Instituto Brasileiro de Geografia e Estatística (IBGE 2012) for South America and Anderson et al. (2008) for Central America.

Results

The previously known geographic distributions of 5 species belonging to *Passiflora* subg. *Decaloba* are extended: *Passiflora amalocarpa* is recorded for the first time from the municipality of São Francisco do Guaporé (Rondônia, Brazil), and also Guyana and Venezuela; *P. auriculata* from the Brazilian states of Maranhão, Rio de Janeiro, and Rio Grande do Norte; *P. longilobis* from Bolivia and Panama; *P. saxicola* from the Brazilian states of Espírito Santo, Mato Grosso do Sul, and Pará; and *P. transversalis* from the Brazilian states of Mato Grosso and Mato Grosso do Sul, as well as Argentina, Paraguay, and Uruguay.

***Passiflora amalocarpa* Barb. Rodr.**, Vellosia 1: 29, t. 12. 1888.
Figures 1A, 2

New records. Bolivia: Santa Cruz, Velasco (14°44'36" S, 061°01'12" W), 23 January 1995, V.R. Guilén & V. Roca 2996 (MO, NY, USZ). Brazil: Rondônia: São Francisco do Guaporé (12°03'08" S 063°34'03" W), 17 November 1996, L.C.B. Lobato et al. 1204 (MG). Guyana: Distrito Rupununi: Karanambo (03°45'N, 059°20' W), 5 September 1988, P.J.M. Maas et al. 7296 (P); Karanambo (03°45' N, 059°18' W), 26 July 95, M.J. Jansen-Jacobs et al. 4639 (GB, NY, P, US); Kanuku, Rupununi, Crabwood (03°10' N, 059°24' W), 29 June 95, M.J. Jansen-Jacobs et al. 4263 (GB, P, US). Venezuela: Bolívar: Caroni (08°27'00" N, 062°31'00" W), 20 July 2003, W. Diaz 6405 (US); Cedeño (07°10'58" N, 065°09'58" W), 17 July 1998, C. Knab-Vispo 874 (WIS); Heres (08°01'45.7" N, 063°51'24.0" W), 27 August 2003, W. Diaz & O. Acosta 6470 (US); Heres (08°20'24" N, 063°09'09" W), 30 August 2003, W. Diaz 6516 (US); Río Paragua (06°51'01" N, 063°06'43" W), 17 April 1943, E.P. Killip 37538 (NY); Monaguas: Sotillo (08°23'47.3" S, 062°39'48.5" W), 19 September 2003, W. Diaz et al. 6621 (US).

Passiflora amalocarpa is known to occur in Peru

and Brazil: Acre, Amazonas, Mato Grosso do Sul, Pará, Paraíba, Rondônia, and Roraima (Milward-de-Azevedo et al. 2012). It is now recorded for the municipality of São Francisco do Guaporé (Rondônia), and Bolivia, Guyana, and Venezuela for the first time (Fig. 1). This species is endemic in the Amazonian Equatorial Domain. It occurs in gallery forests of the Amazon Savannas, in the Northern Region of Brazil, in Venezuela, and in Rupununi, bordering the state of Roraima in Guyana, an area of great diversity and endemism (Persaud 2016). It occurs in Ombrophilous Alluvial Forest and Lowland Ombrophilous Dense Forest, where it is generally associated with rivers and igapós (blackwater-flooded forests) in Brazil (Milward-de-Azevedo et al. 2012), Guyana, and Venezuela.

Identification. Stem flattened, striate, verrucose. Stipules linear-subulate. Leaves with petioles lacking glands, blades 2- or 3-lobed, ocelli present. Bracts linear-subulate. Flowers solitary, sepals and petals oblong with apex acute, corona biseriate, external filaments filiform with apex acute, internal filaments with apex bilobate, operculum denticulate, limen annular, ovary fusiform and glabrous. Fruit a berry, fusiform and glabrous. Seeds elliptical, testa with transverse grooves. It is distinguished from other species of the *P. misera* complex by its fusiform and glabrous ovaries and fruits.

***Passiflora auriculata* Kunth**, Nov. Gen. Sp. 2: 131. 1817.
Figures 1B, 3

New records. Brazil: Maranhão: São Luís (02°31'47" S, 044°18'10" W), February/March 1939, R.L. Fróes 11741 (MO, NY); Rio Grande do Norte: Parnamirim, Mata do Jiquí (05°56' S, 035°11' W), 28 November 2007, J.O.N. Silva et al. 22 (UFRN); Parnamirim, Mata do Jiquí (05°56' S, 035°11' W), 28 November 2007, A.C.P. Oliveira et al. 780 (UFRN); Rio de Janeiro: Teresópolis (22°24'44" S, 042°57'56" W), 30 May 1960, A. Ab. 1312 (HB).

This species is known to occur in Bolivia, Brazil (Acre, Amapá, Amazonas, Espírito Santo, Mato Grosso, Minas Gerais, Pará, Rondônia, and Roraima), Colombia, Costa Rica, Ecuador, French Guyana, Guyana, Nicaragua, Panama, Peru, Suriname, Trinidad, and Venezuela (Milward-de-Azevedo et al. 2012). It is now recorded for the Brazilian states of Maranhão, Rio de Janeiro, and Rio Grande do Norte (Fig. 3). This species presents a Neotropical distribution, occurring from Andean highland forests, lowlands forests, and mountain ranges covered by rainforest and typical Savanna vegetation. In southeastern Brazil, this species occurs in the Atlantic Forest Domain, in areas covered by Montane Tropical Rain Forest.

Identification. Stem cylindrical, striate. Stipules linear-subulate. Leaves with petioles with one pair of auriculate glands, blades ovate to lanceolate, unlobed to slightly 3-lobed, ocelli present. Bracts ovate. Flowers solitary,

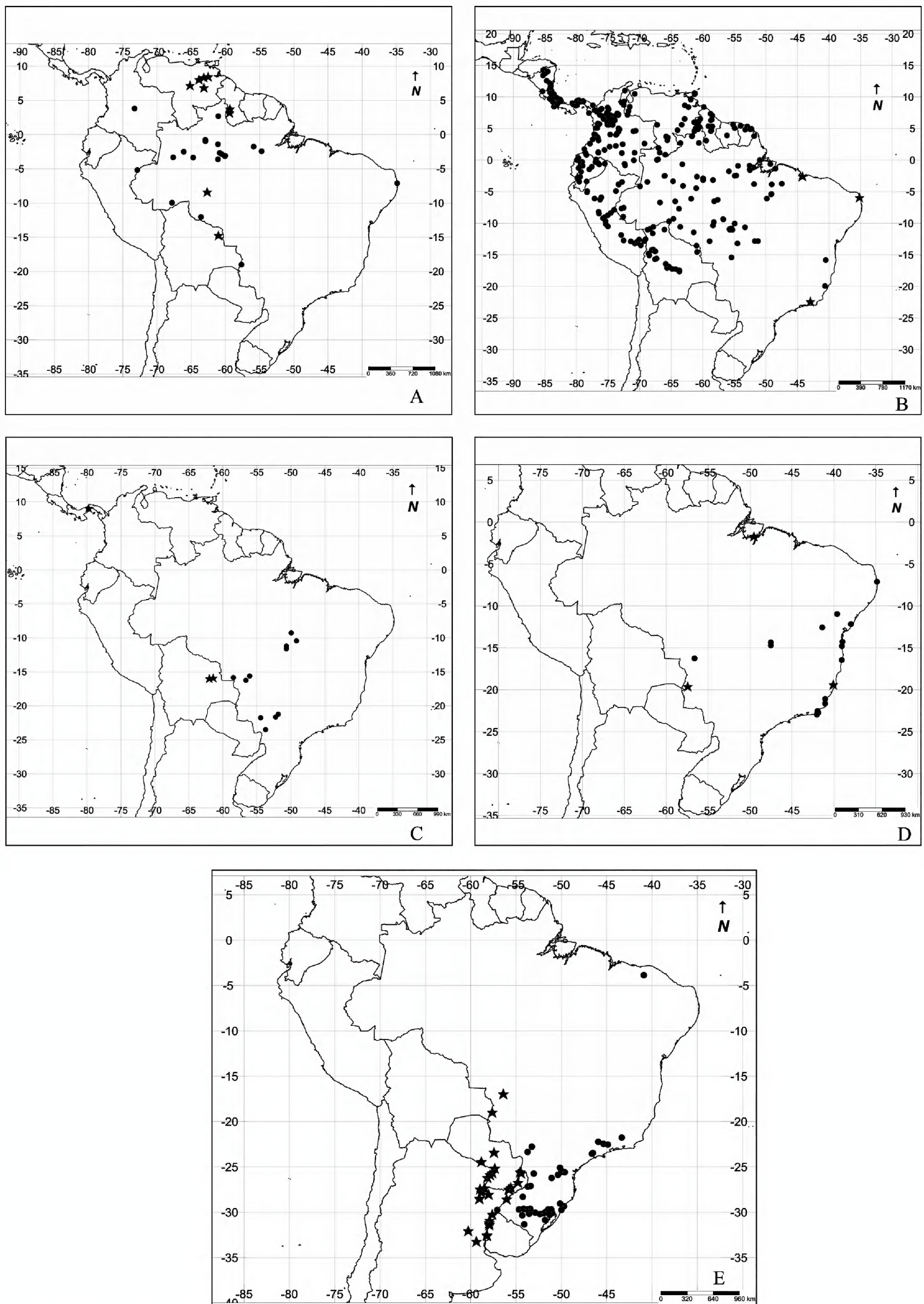


Figure 1. Geographical distribution maps. **A.** *Passiflora amalocarpa* Barb. Rodr. **B.** *Passiflora auriculata* Kunth. **C.** *Passiflora longilobis* Hoehne. **D.** *Passiflora saxicola* Gontsch. **E.** *Passiflora transversalis* M.A. Milward-de-Azevedo. Legend: (●) occurrence points taken from Milward-de-Azevedo (2007) and Milward-de-Azevedo et al. (2012), (★) new occurrence points.

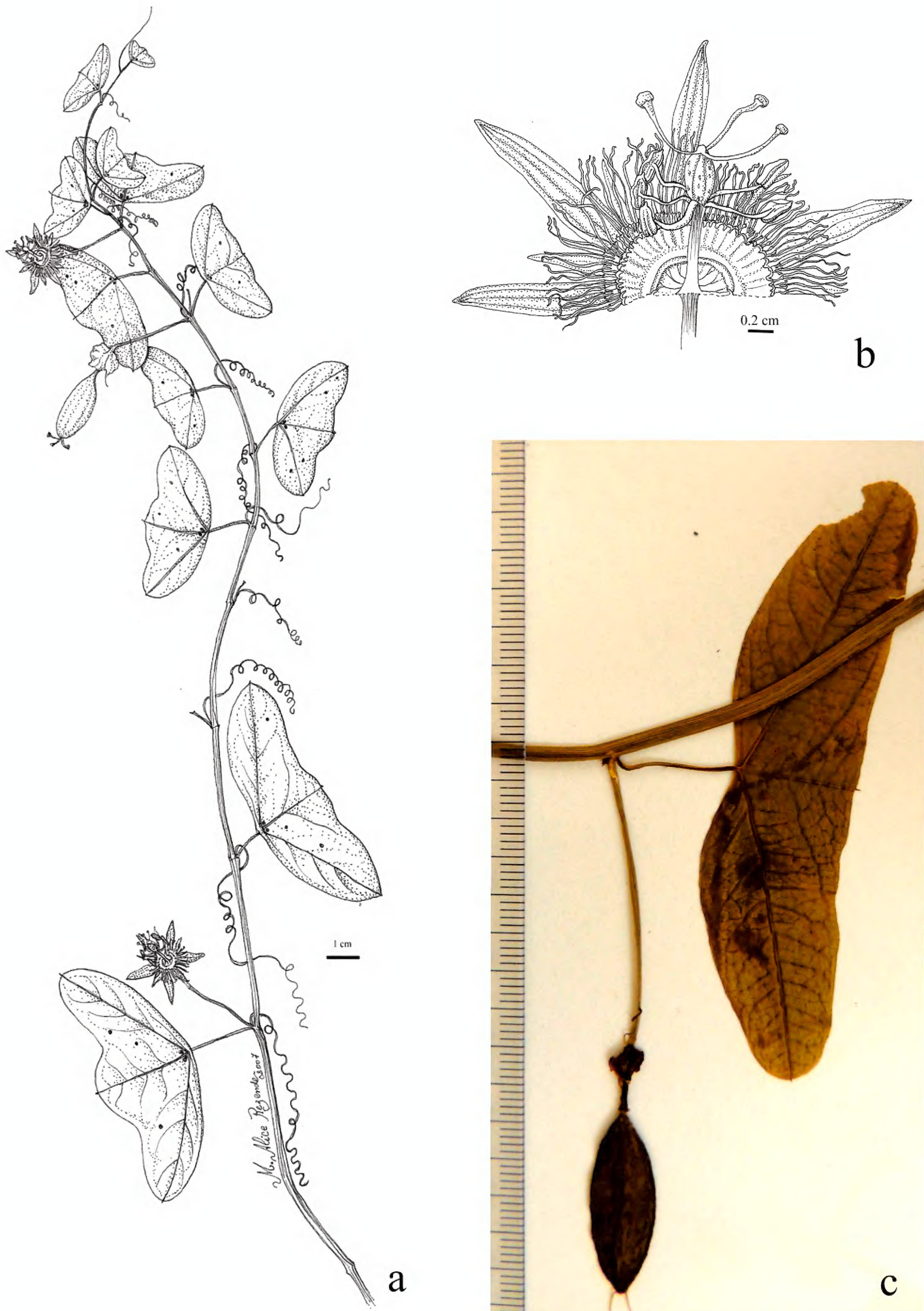


Figure 2. *Passiflora amalocarpa* Barb. Rodr. **A.** Detail of branch from E. Soares & Knowles 744 (INPA). **B.** Flower in transverse section from E. Soares & Knowles (INPA). **C.** Leaf and fruit from S. Mori et C. Gracie 21772 (NY).

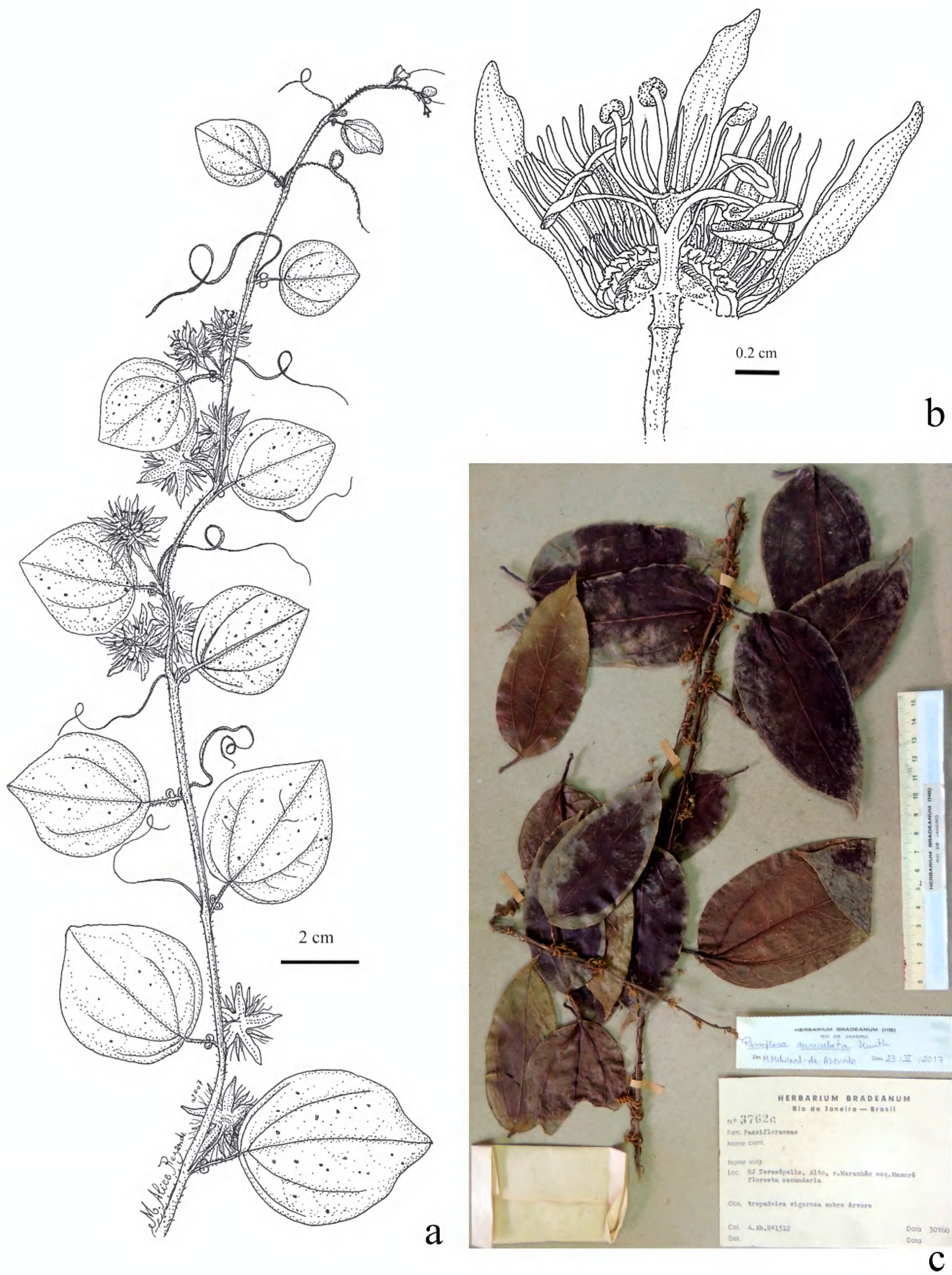


Figure 3. *Passiflora auriculata* Kunth. **A.** Detail of branch from J.M. Pires 395 (RB). **B.** Flower in transverse section from J.M. Pires 395. **C.** Herbarium sheet of A. Ab. 1312 (HB).

sepals and petals oblong with acute, corona biseriate, external filaments filiform with apex acute, rarely lobate, internal filaments filiform with apex bilobate, operculum denticulate, limen annular, ovary ellipsoid and tomentose. Fruit a berry globose to subglobose, sparsely tomentose. Seeds obovate, testa with transversal grooves.

Passiflora longilobis Hoehne, Com. Lin. Telegr., Bot. 1: 71, fig. 63. 1910.

Figures 1C, 4

New records. Bolivia: Santa Cruz: Provincia Velasco (16°00' S, 062°00' W), 17 November 1996, A. Jardim & F. Mamani 3711 (G, MO); Provincia Velasco (15°54'20" S, 061°25'33" W), 31 March 2004, O. Morrone & M. Belgrado 5074 (LPB). Panama: Baillemona (09°03' N, 079°45' W): September 1924, F.L. Stevens 687 (US).

Considered to be endemic in Brazil, *P. longilobis* is known to occur in states of Mato Grosso, Mato Grosso do Sul, Paraná, and Tocantins (Milward-de-Azevedo et al. 2012). However, it is now recorded from Bolivia and Panama (Fig. 5). This species is thought to be endemic to the Savanna, occurring in Pantanal wetlands and Chaco vegetation, and is generally associated with rivers, várzeas (seasonal floodplain forest inundated by white-water rivers), or flooded areas (Milward-de-Azevedo et al. 2012). In Panama it was found in humid tropical lowland rainforest.

Identification. Stem flattened to complanate, striate, and verrucose. Stipules linear-subulate. Leaves with petioles without glands, blades 2-lobed, ocelli present. Bracts linear-subulate. Flowers solitary, sepals and petals oblong with apex acute, corona biseriate, external filaments filiform, verrucose with apex acute, internal filaments filiform with apex bilobate, operculum denticulate, limen recurved, ovary fusiform and glabrous. Fruit a berry, ellipsoid, glabrous. Seeds obovoid, testa with transverse grooves. It is distinguished from other species of the *P. misera* complex by its extremely narrow leaf blades, flowers with a fusiform and glabrous ovary, and ellipsoidal, glabrous fruits.

Passiflora saxicola Gontsch., Izv. Glavn. Bot. Sada S.S.S.R. 26: 559. 1927.

Figures 1D, 5

New records. Brazil: Espírito Santo: Linhares (19.3911° S, 040.0722° W), 04 May 1995, D.A. Folli 2600 (IAC); Mato Grosso do Sul, Porto Esperança (19°36'30" S, 057°26'00" W), 28 February 1930/1 March 1930, A. Chase 11092A (US); Pará: São Sebastião da Boa Vista (01°43'03" S, 049°32'27" W), May/June 1929, B.E. Dahlgren & E. Sella 62 (F, US).

Endemic in Brazil, this species is known to occur in the states of Bahia, Goiás, Mato Grosso, Paraíba, and Rio de Janeiro (Milward-de-Azevedo et al. 2012). It is now recorded from the states of Espírito Santo, Mato Grosso do Sul, and Pará (Fig. 7). This species presents a Brazilian Central Atlantic (Atlantic Forest and Amazon

Rainforest) distribution pattern, with a disjunct distribution. It occurs in areas of restinga vegetation and Tropical Rainforest, Montane Dense Forest, and Savannas. Generally found in regions on sandy soils with a predominance of grassland or shrub vegetation (Milward-de-Azevedo et al. 2012).

Identification. Stem flattened, striate, verrucose. Stipules linear-subulate. Leaves with petioles without glands, blades 2- or 3-lobed, ocelli present. Bracts linear-subulate. Flowers solitary, sepals and petals oblong with apex acute, corona biseriate, external filaments liguliform with apex capitate, internal filaments filiform with apex bilobate, operculum denticulate, limen annular, ovary ellipsoid and glabrous. Fruit a berry, ellipsoid and glabrous. Seeds obovoid, testa with transversal grooves. It is distinguished from other species of the *P. misera* complex by the rounded, truncated, or emarginated lobe apices and the ellipsoidal and glabrous ovaries and fruits.

Passiflora transversalis M.A. Milward-de-Azevedo, Brittonia 60(4): 314. 2008.

Figures 1E, 6

New records. Argentina: Provincia Chaco: Departamento San Fernando, Isla Soto (27°47'48" S, 058°49'57" W), 18 December 1974, A. Burkart et al. 30963 (US); Provincia Corrientes: Departamento Bella Vista (28°27'09" S, 058°57'49" W), 28 January 1956, T.M. Petersen 3713 (NY); Departamento Monte Caseros, Cambai (30°09'25" S, 057°39'53" W), 30 December 1951, E.G. Nicora 5995 (US); Departamento Mburucuyá, Estancia Santa Teresa (26°05'00" S, 058°08'00" W), 27 November 1972, T.M. Pedersen 6653 (BR, C, GH, P, US); Departamento Santo Tomé (28°13'41" S, 056°01'10" W), 24 November 1944, C. Ibarrola 1406 (AAH, NY); Departamento Santo Tomé (28°13'41" S, 056°01'10" W), 4 November 1979, L. Ferraro 1992 (K); Departamento Santo Tomé, San Tomé (28°13'41" S, 056°01'10" W), 14 February 1986, R.H. Fortunato 757 (INTA); Provincia Entre Rios: Departamento Concordia, San Carlos (31°20' S, 058°00' W), 11 December 1946, T. Meyer 10899 (LIL); Departamento Concordia (31°13'40" S, 058°16'35" W), 28 February 1993, N. Bacigalupo et al. 1623 (NY); Departamento Federación, Santa Ana (30°53'57" S, 057°55'51" W), 20 December 1961, J.C. Gamero 1154 (LIL); Departamento Gualaguaychú (32°57'57" S, 058°54'45" W), March 1988, M. Caccavari & R. Fortunato 1048 (INTA); Departamento Uruguay (32°25'15" S, 058°27'17" W), 25 November 1946, T. Meyer 10423 (LIL); Departamento Uruguay (32°25'15" S, 058°27'17" W), 25 November 1946, T. Meyer 10454 (LIL); Provincia Formosa: Departamento Formosa, Dalmacia (25°50'39" S, 057°53'52" W), 6 January 1980, E.R. Guaglianone et al. 387 (US); Provincia Misiones: Candelaria, Costão do Rio Paraná (27°27'41" S, 055°44'40" W), 18 January 1946, M.S. Bertoni 2649 (K, LIL); Candelaria (27°27'41" S, 055°44'40" W), 1 February 1946, M.S. Bertoni 2684 (LIL, P); Departamento Capital, Garupá (27°27'13" S, 055°51'41" W), 25

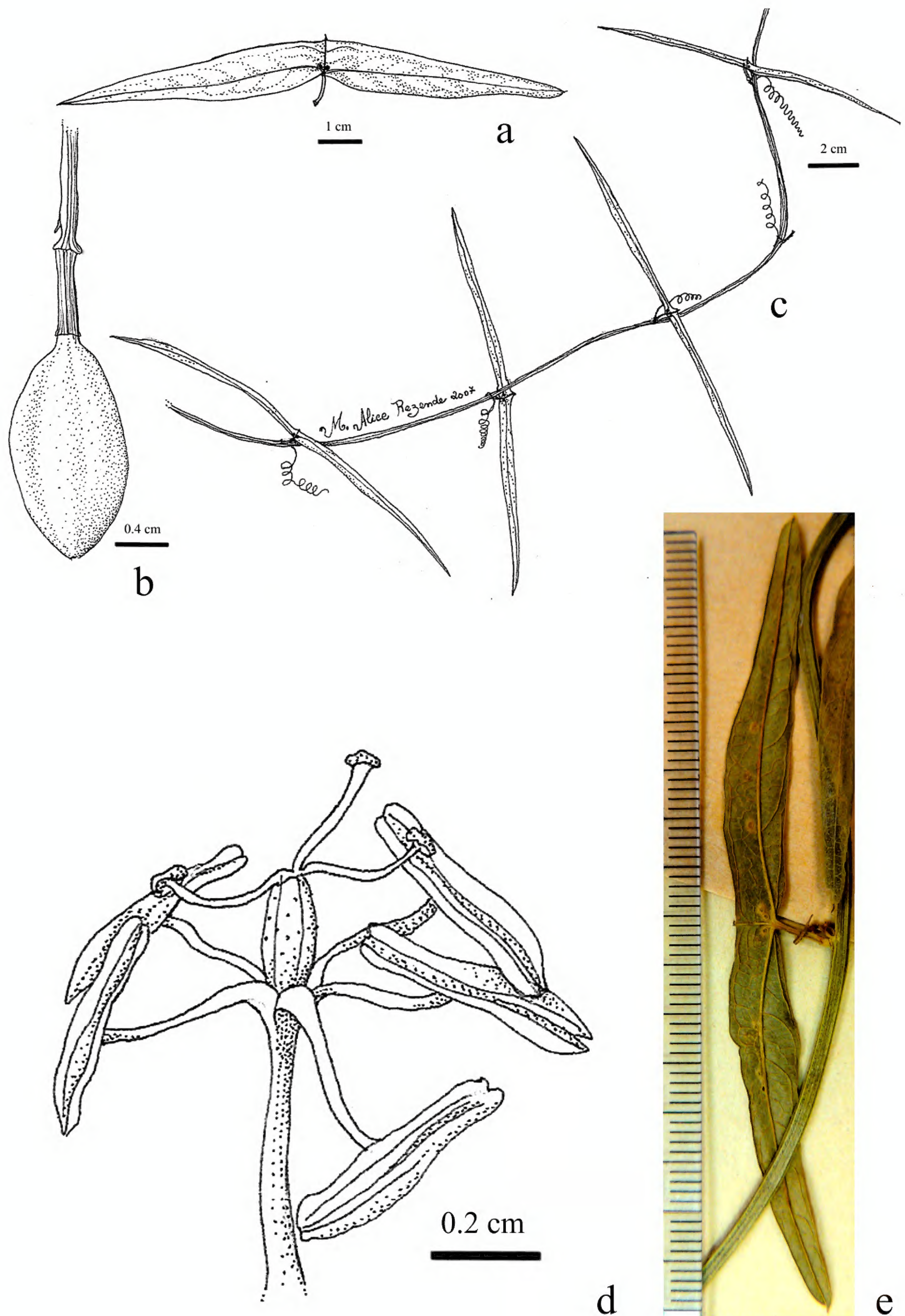


Figure 4. *Passiflora longilobis* Hoehne. **A.** Leaf from F.C. Hoehne 4648 (R). **B.** Fruit from V.C. Souza et al. 14.799 (ESA). **C.** Detail of branch from V.C. Souza et al. 14.503 (ESA). **D.** Detail of androgynophore from V.C. Souza et al. 14.503 (ESA). **E.** Leaf from G. Hatschbach 25239 (MBM).

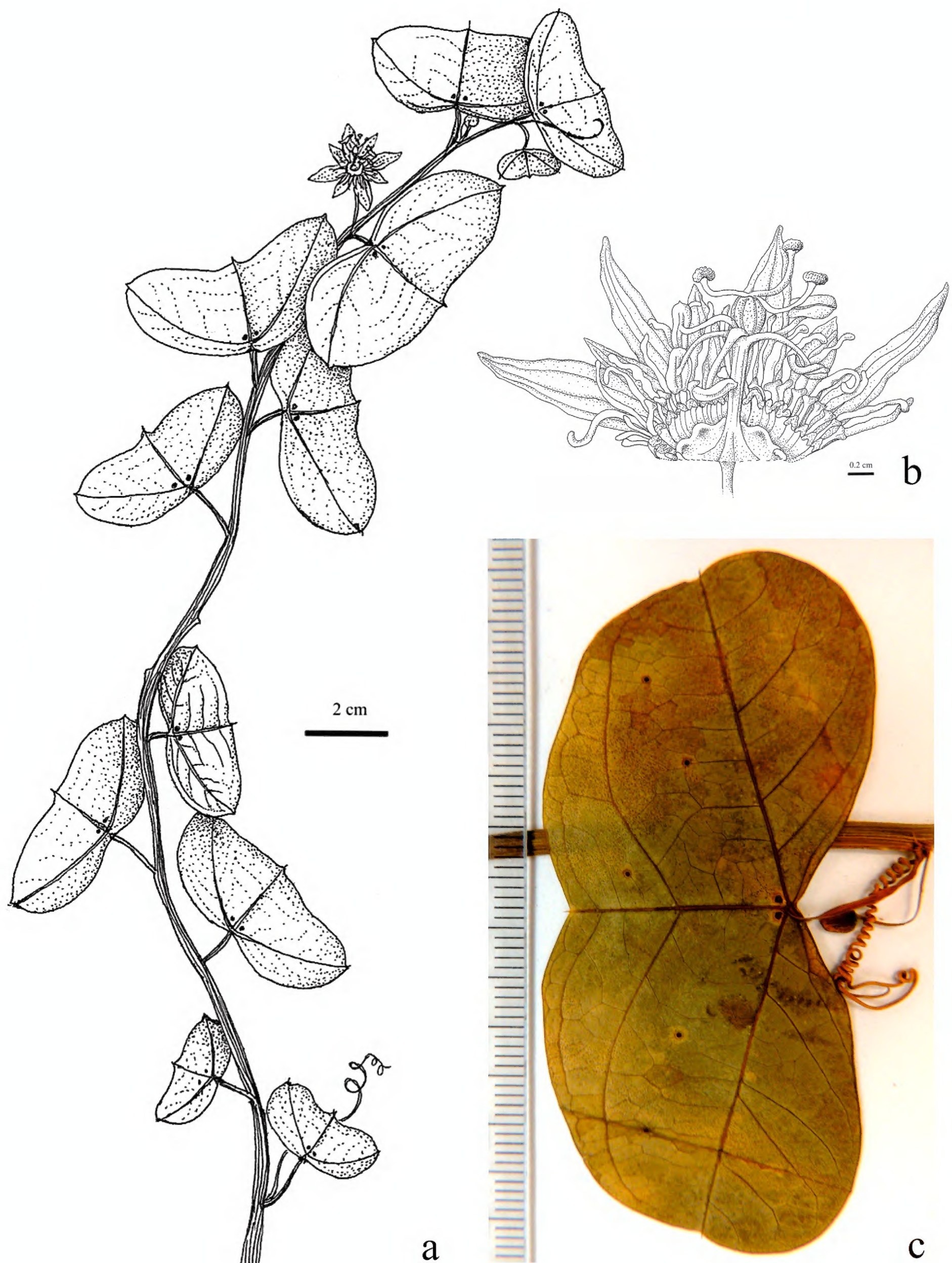


Figure 5. *Passiflora saxicola* Gontsch. **A.** Detail of branch from R.M. Harley 17540 (RB). **B.** Flower in transverse section from R.M. Harley 17540 (RB). **C.** Leaf from F. Segadas-Viana 4120 (R).

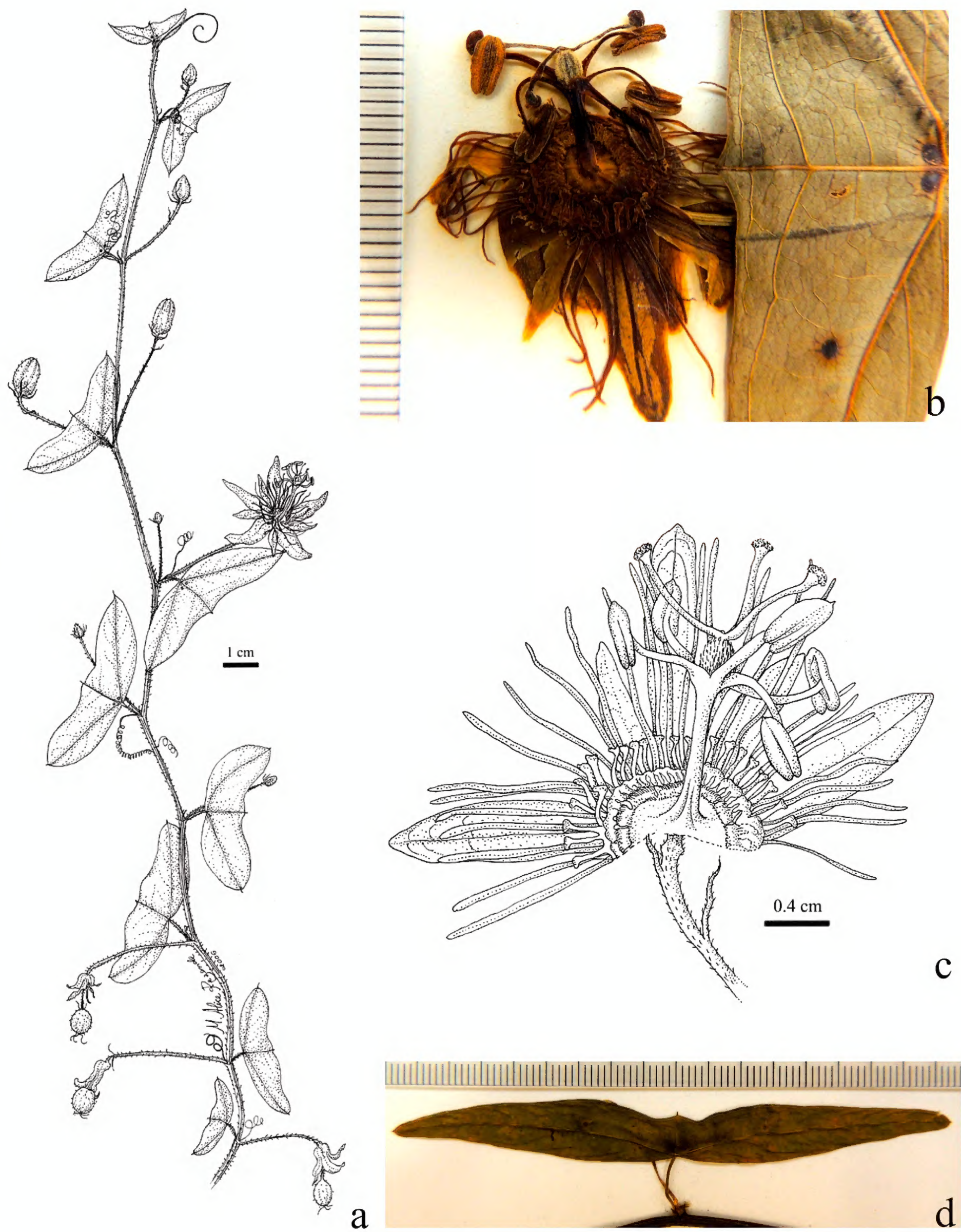


Figure 6. *Passiflora transversalis* M.A. Milward-de-Azevedo. **A.** Detail of branch from C. Mondin 1760 (PACA). **B.** Detail of flower from M.M. Arbo 2622 et al. (CTES). **C.** Flower in transverse section from A.C. Brade 6458 (MO). **D.** Leaf from M.E. Mulgura de Romero 3478 et al. (MO).

January 1976, C. Romanczuk 328 (US); Cataratas del Iguazú (27°22'34" S, 055°54'24" W), 20 March 1944, T. Meyer 6516 (GH, F); Cataratas del Iguazú (27°22'34" S, 055°54'24" W), 13 February 1945, O. Núñez & C. Rivas 168 (LPS); Puerto Aguirre (27°22'34" S, 055°54'24" W), 16 September 1915, C. Osten & T. Rojas 8301 (G, US); Departamento San Ignacio, San Ignacio (27°15'26" S, 055°32'07" W), 27 January 1947, T. Meyer 11653 (LIL); Departamento San Ignacio, Parque Provincial Teyucuaré (27°17' S, 055°35' W), 18 March 2002, M.E.M. Romero et al. 3478 (MO); Departamento San Pedro, El Alcazar (24°12'34" S, 056°33'03" W), 1 April 1949, E. Schwindt 1365 (LIL). Brazil: Mato Grosso (15°35'46" S, 056°05'48" W): 5 April 1979, G.B. Schaller 302 (MO); Mato Grosso do Sul, Corumbá (18.9767° S, 057.6366° W), P. Acevedo-Rodriguez et al. 16694 (US). Paraguai: Departamento Central: Estero del Ypoá (25°39' S, 057°38' W), 24 February 1993, E. Zardini & L. Guerrero 35097 (MO); Departamento Concepcion: Concepcion (23°25'16" S, 057°26'02" W), 1901/2, E. Hassler 7333 (AAH); Departamento Cordillera: Emboscada (25°07'19" S, 057°21'08" W), 13 June 1984, M.M. Arbo et al. 2622 (CTES); Departamento Presidente Hayes: Fortín General Bruguez, margen do rio Pilcomayo (24°45' S, 058°50' W), 03 January 1980, P. Arenas 1557 (MO, US). Uruguay: Salto (31°23'08" S, 057°57'36" W): 17 February 1931, A. Castellanos 31/1185 (US).

Considered as endemic in Brazil, this species is known to occur in the states of Ceará, Minas Gerais, Paraná, Rio Grande do Sul, Santa Catarina, and São Paulo (Milward-de-Azevedo et al. 2012). It is now recorded from Argentina, Paraguay, and Uruguay. In Brazil, it is now recorded from the states of Mato Grosso and Mato Grosso do Sul (Fig. 9). This species presents a Meridional and Atlantic distribution pattern and occurs in the Atlantic Forest, Araucaria Plateau, and Savanna domains, in areas of Tropical Rain Forest, Savannas, Savanna Steppe, and Steppe. It has a disjunct distribution only in the remnant of the Atlantic Nebular Forest in Chapada de Ibiapaba, Ceará. It lives in areas of capoeira (fields that have reverted to scrubland), forest edges, roadsides, rivers, and well-drained soils (Milward-de-Azevedo et al. 2012).

Identification. Stem semicylindrical to flattened, striate. Stipules linear-subulate. Leaves with petioles without glands, blades 2-lobed, ocelli present. Bracts linear-subulate. Flowers solitary, sepals and petals oblong with apex acute, corona biseriate, external filaments filiform with apex acute, internal filaments filiform with apex 2-lobate, operculum denticulate, limen annular, ovary ellipsoid and pubescent. Fruit a berry, globose to subglobose, pubescent. Seeds ellipsoid to obovoid, testa with transverse grooves. It is distinguished from other species of the *P. misera* complex by not having verrucose stems and by its flowers with ellipsoidal and pubescent ovaries and its pubescent, globose to subglobose fruits.

Discussion

Passiflora amalocarpa appears in dense and open Ombrophilous Forest, and Seasonal Semideciduous Forest (Milward-de-Azevedo et al. 2012), but it can also occur in Savannas. *Passiflora auriculata* is typical of the Amazonian Equatorial Domain, but it also occurs in the Atlantic Forest Domain in southeastern Brazil (Espírito Santo, Minas Gerais, and Rio de Janeiro) in areas covered by dense and open Ombrophilous Forest (Milward-de-Azevedo et al. 2012); in northeastern Brazil (Rio Grande do Norte), this species occurs in remnants of Atlantic Forest. *Passiflora longilobis*, which is considered endemic to Brazil, is practically endemic to the Savanna Domain, where it occurs in Pantanal and Dense Ombrophilous Forest associated with rivers, flooded areas, and várzeas (Milward-de-Azevedo et al. 2012). However, the new record in Panama, exceptionally, was from tropical rainforest. *Passiflora saxicola* is restricted to Brazil, occurring in areas of Savanna and restinga on sandy soils with grassland or shrub vegetation (Milward-de-Azevedo et al. 2012). *Passiflora transversalis* was previously considered endemic to Brazil, where it occurs in areas of Dense Ombrophilous Forest, Steppe, and secondary forest (Milward-de-Azevedo et al. 2012). This species has a disjunct distribution with a Meridional and Atlantic distribution pattern, and the new records extended its distribution beyond Brazil.

These new records expand the known distributions of 5 species of *Passiflora* subg. *Decaloba*. Many studies with new records in Passifloraceae, such as Silva et al. (2016, 2018) and Mezzonato-Pires et al. (2017, 2018), show the importance of filling distribution gaps and mapping occurrence sites. The new records presented here reinforce the need for more collections, especially in the Amazonian Domain, as well as the correct identification of specimens by specialists. Due mostly to misidentifications, new records of *P. longilobis* and *P. transversalis*, previously considered endemic to Brazil, were confirmed from Bolivia and Panama, and from Argentina, Paraguay and Uruguay, respectively.

Acknowledgements

I thank the MO herbarium, and especially John MacDougal, James Solomon, Peter Jørgensen, and Alba Arbelaiz for their help at the Missouri Botanical Garden. I also thank Maria Alice Rezende for the illustrations, Dr Luís Felipe Skinner for organizing the images in the figures; Helder Marcos Nunes Candido for revising the English, and the reviewers.

References

- Anderson ER, Cherrington EA, Flores AI, Perez JB, Carrillo R, Sempris E (2008) Potential Impacts of Climate Change on Biodiversity in Central America, Mexico, and the Dominican Republic. CATHALAC/USAID, Panama, 105 pp.
- Feuillet C, MacDougal J ("2003" 2004) A new infrageneric classifica-

- tion of *Passiflora* L. (Passifloraceae). *Passiflora: The Journal & Newsletter of Passiflora Society International* 13 (2): 34–38.
- IBGE (2012) Manual técnico da vegetação brasileira: sistema fitogeográfico, inventário de formações florestais e campestres, técnicas e manejo de coleções botânicas, procedimentos para mapeamentos. Série Manuais Técnicos em Geociências 1. Instituto Brasileiro de Geografia e Estatística, Rio de Janeiro, 271 pp.
- Krosnick SE, Ford AJ, Freudenstein JV (2009) Taxonomic revision of *Passiflora* subgenus *Tetrapathea* including the monotypic genera *Hollrungia* and *Tetrapathea* (Passifloraceae), and a new species of *Passiflora*. *Systematic Botany* 34 (2): 375–385. <https://doi.org/10.1600/036364409788606343>
- Mezzonato-Pires AC, Mendonça CBF, Milward-de-Azevedo MA, Gonçalves-Esteves V (2017) Distribution extensions for species of the *Passiflora* subgenus *Astrophea* (DC.) Masters from Brazil (Passifloraceae s.s.). *Check List* 13 (5): 467–473. <https://doi.org/10.15560/13.5.467>
- Mezzonato-Pires AC, Milward-de-Azevedo MA, Mendonça CBF, Gonçalves-Esteves V (2018) Taxonomy, palynology and distribution notes of seven species of *Passiflora* L. (Passifloraceae s.s.) newly recorded from Brazil. *PhytoKeys* 95: 1–14. <https://doi.org/10.3897/phytokeys.95.22342>
- Milward-de-Azevedo MA (2007) Revisão taxonômica de *Passiflora* L. subgênero *Decaloba* (DC.) Rchb. no Brasil. PhD Dissertation, Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, 243 pp.
- Milward-de-Azevedo MA, Baumgratz JFA, Gonçalves-Esteves V (2012) A taxonomy revision of *Passiflora* subgenus *Decaloba* (Passifloraceae) in Brazil. *Phytotaxa* 53: 1–68. <https://doi.org/10.11646/phytotaxa.53.1.1>
- Ocampo Pérez J, Eeckenbrugge GC (2017) Morphological characterization in the genus *Passiflora* L.: an approach to understanding its complex variability. *Plant Systematic Evolution* 303 (4): 531–558. <https://doi.org/10.1007/s00606-017-1390-2>
- Persaud J (2016) Biodiversity of the Southern Rupununi Savannah: Guyana–South America. World Wildlife Found, Georgetown/Global Wildlife Conservation, Austin, 45 pp.
- Rizzini CT (1977) Sistematização terminológica da folha. *Rodriguésia* 42: 103–125.
- Silva EO, Guarçoni EAE, Ferreira AWC, Oliveira MS, Oliveira Junior CN (2016) First record of *Passiflora pedata* L. (Passifloraceae) from Maranhão state, northeastern Brazil. *Check List* 12 (5): 1958. <https://doi.org/10.15560/12.5.1958>
- Silva EO, Milward-de-Azevedo MA, Sá NAS, Sousa DA, Conceição GM (2018) New records of *Passiflora* L. (Passifloraceae) species from Maranhão state and northeastern Brazil. *Check List* 14 (2): 347–352. <https://doi.org/10.15560/14.2.347>
- Stearn WT (1995) *Botanic Latin: History, Grammar, Syntax, Terminology and Vocabulary*. Timber Press, Portland, Oregon, 560 pp.
- Thiers B (2018) *Index Herbariorum: A Global Directory of Public Herbaria and Associated Staff*. New York Botanical Garden's Virtual Herbarium. <http://sweetgum.nybg.org/science/ih/>. Accessed on: 2018-4-7.

Appendix

Material used for figures. *Passiflora amalocarpa* Barb. Rodr.: Brazil: Amazonas: Rio Negro, Ponta do Pagodão (02°52' S, 060°29' W), 20 July 1991, S. Mori et C. Gracie 21772 (NY); Pará: Oriximiná: Porto Trombetas (01°28'04" S, 056°22'44" W), E. Soares et O.H. Knowles 744 (INPA). *Passiflora auriculata* Kunth: Brazil: Amazonas: Rio Negro, Ilha das Flores, Foz do rio Vaupés (00°02'32" N, 067°16'55" W), 18 April 1947, J.M. Pires 395 (RB). *Passiflora longilobis* Hoehne: Brazil: Mato Grosso: Coxipó da Ponte (15°37'07" S, 056°03'43" W), March 1911, F.C. Hoenhe 4648 (R); Luciara, Estrada para a Mata do Coco, Fazenda Três Pontas do Araguaia (11°07'21.9" S, 050°44'17.5" W), 19 March 1997, V.C. Souza et al. 14503 (ESA); Rio Brilhante, Rio das Araras (21°48'07" S, 054°32'47" W), 26 October 1970, G. Hatschbach 25239 (G, MBM); São Félix do Araguaia (11.6172° S, 050.6694° W), 21 March 1997, V.C. Souza 14799 (ESA). *Passiflora saxicola* Gontsch.: Brazil: Bahia: Itacaré, Rio das Contas (14°18' S, 039°59' W), 31 March 1974, R.M. Harley 17540 (RB); Rio de Janeiro: Arraial do Cabo, Pontal Beach (22°57'58" S, 042°01'40" W), 10 February 1982, F. Segadas-Viana 4120 (B, R). *Passiflora transversalis* M.A. Milward-de-Azevedo: Brazil: São Paulo: São Paulo, Água Branca (23°31'46" S, 046°40'17" W), 21 December 1913, A.C. Brade 6458 (MO); Rio Grande do Sul, Camuquã, Ilha de Santo Antônio, Pacheca (30.851100° S, 051.812198° W), 20 January 1999, C. Mondin 1760 (PACA).